CLAIMS

1. An acoustic transducer adapted to co-operate with a surface to induce into the surface audiofrequency vibrations whereby the surface radiates sound therefrom, the transducer comprising an active element which changes in length along a first axis in response to an audiofrequency input signal, the element being mounted between an inertial mass and a foot which in use engages a surface whereby audiofrequency vibrations produced by the active element are acoustically coupled into the surface, characterised in that the foot is hingedly connected to the inertial mass and the active element is located between the foot and the mass such that the angle between the first axis and the surface is less than 90°, in use.

2. An acoustic transducer according to Claim 1, wherein the said angle is 45° or less.

3. An acoustic transducer according to Claim 2, wherein the first axis extends substantially parallel to the surface in use.

4. An acoustic transducer according to Claim 1, wherein the connection between the inertial mass and the foot comprises a resiliently flexible material.

5. An acoustic transducer according to Claim 4, wherein the resiliently flexible material is a low compliance material.

6. An acoustic transducer according to Claim 5, wherein said material is spring steel.

7. An acoustic transducer according to Claim 1, wherein the centre of the foot is directly below the centre of gravity of the transducer.

8. An acoustic transducer according to Claim 1, wherein the inertial mass includes one or more of batteries, electrical circuitry, and a housing for the transducer.

9. An acoustic transducer according to Claim 1, wherein the active element comprises a magnetostrictive material.

10. An acoustic transducer according to Claim 1, wherein the active element comprises a piezoelectric material.

11. A magnetostrictive actuator, comprising a magnetostrictive element under the influence of at least two stacked electromagnetic coils, each coil in the stack being constructed to have a different frequency response from the other coil or coils in the

stack, the coils being excited at the same time, whereby the actuator exhibits a greater frequency bandwidth than if the stacked coils were all of the same specification.

12. A magnetostrictive actuator according to Claim 11, wherein the coils differ from each other in the number of turns of wire, the thickness of the wire and/or the resistivity of the wire.

13. A magnetostrictive actuator according to Claim 11, wherein the signal to each coil is controlled separately.

14. An acoustic actuator for use in inducing an acoustic signal into a panel, the actuator comprising a first active element which changes in length in response to an audiofrequency input signal, the element being mounted between an inertial mass and a foot which in use engages a surface of the panel whereby audiofrequency vibrations produced by the active element are transmitted to the panel, characterised by a second active element mounted between the mass and the foot, the second active element having a different frequency response to that of the first active element.

15. An acoustic actuator according to Claim 14, wherein the first active element comprises a magnetostrictive material.

16. An acoustic actuator according to Claim 15, wherein the second active element also comprises a magnetostrictive material.

17. An acoustic actuator according to Claim 14, incorporating an additional high frequency actuator.

18. An acoustic actuator according to Claims 17, wherein the high frequency actuator is a moving coil actuator.

19. An acoustic actuator according to Claim 16, wherein the second active element comprises a flexible yoke arranged such that extension and contraction of the magnetostrictive element causes inward and outward movement of the yoke in a direction transverse to the longitudinal axis of the magnetostrictive element.

20. An acoustic actuator for use in inducing an acoustic signal into a primary panel, the actuator comprising a first driver having an active element which changes in length in response to an audiofrequency input signal, the driver being mounted between an inertial mass and a foot which in use engages the panel whereby audiofrequency vibrations produced by the active element are transmitted to the panel, characterised by a

second driver coupled to a secondary panel smaller than said primary panel and carried by the second driver.

21. An acoustic actuator according to Claim 20, wherein the first driver is a magnetostrictive device.

22. An acoustic actuator according to Claim 20, wherein the second driver is a moving coil device.

23. An acoustic actuator according to Claim 20, wherein the second driver is mounted on the first driver.

24. An acoustic actuator according to Claim 23, comprising a reaction mass having a recess in a first face thereof in which the first driver is located and a second face opposite the first on which the second driver is mounted, a passageway providing communication between the recess and the second face.

25. An acoustic actuator according to Claim 24, wherein the passageway has a width of approximately 4mm.

26. An acoustic actuator according to Claim 23, wherein the second driver is mounted on the first driver via a compliant mounting.

27. An acoustic actuator according to Claim 26, wherein the compliant mounting comprises one or more resilient members.